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OLIFF & BERRIDGE, PLC
P.O. BOX 320850
ALEXANDRIA, VA 22320-4850

EXAMINER	
WANG, EUGENIA	

ART UNIT	PAPER NUMBER
1795	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/828,261	HIRAKATA ET AL.	
	Examiner	Art Unit	
	EUGENIA WANG	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In response to the amendment received on September 24, 2008:

   a. Claims 1-19 are pending.

   b. The previous 112 rejections have been withdrawn in light of the amendment.

   c. A rejection similar to the non-final office action dated March 3, 2008 is applied, wherein the new features are obviated with another reference.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on September 24, 2008 has been entered.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-10, 13, 14, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0053469 (Kobayashi et al.) in view of US 2003/0031905 (Saito et al.), US 2003/0129461 (Bruck et al.), and US 6200021 (Mitsutani et al.).

As to claims 1 and 4, Kobayashi et al. teach a fuel cell system. Kobayashi's fuel cell system has an ignition that can be switched on to start the fuel cell (wherein it is interpreted such a switch is a start switch, as the ignition is a switch that start the fuel cell when on) (para 0079). (Note: Since there is a switching to an on position, there must inherently be an off position, since it must be switched to on from off). In fig. 1, temperature sensors are placed to determine the temperature of the fuel cell – T3, which measures cathode exhaust prior being introduced to a compressor, and T2, which measures cathode exhaust after being introduced to a compressor, and T1, which measures the cathode inlet. Fig. 4 teaches a start up warming-up method for the fuel cell (para 0081, lines 1-3). The controller judges whether the exhaust Ae at the outlet of the fuel cell of the cathode is lower than 20ºC, if not warm-up is finished, but if so warm-up is continued (para 0083; para 0084, lines 1-3). This sort of test is performed for the air exhaust discharge from the compressor, the limit being 130ºC, then warm up continues as well (para 0084, lines 10-15). It is also noted that exhaust gas from the fuel cell (heat generated through the electrochemical reaction) is recycled back to the fuel cell upon warm up conditions (para 0010; fig. 1). Therefore, the heat generated form the electrochemical reaction is at the very least capable for being used in a temperature-maintenance operation. Furthermore, by measuring temperatures (namely the one discharge side of the compressor), the system (via controller [4]) recognizes an abnormality and turns on an alarm lamp to inform the driver (para 0085). The abnormality discovered is based off of the internal temperature of the fuel cell and would inherently pertain to something within the fuel cell (be it the stack or the

temperature sensor). The driver would then be motivated to discover what the abnormality stems from, and thus the controller [4] and the alarm lamp function as an abnormality determination unit and a warning issuance unit. (See * below for an alternate interpretation with respect to the abnormality determination.)

*Alternately, it can be interpreted that Kobayashi et al. does not specifically notify the driver of an abnormality that definitely corresponds with the temperature sensor. However, the abnormality discovered is based off of the internal temperature of the fuel cell and would pertain to something within the fuel cell (be it the stack or the temperature sensor). The motivation form making the differentiation of what the abnormality pertains to is to give the driver more information about where the problem with the fuel cell lies. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to further differentiate between a temperature detector defect or a fuel cell stack defect in order to make malfunction determination easier on the driver.

Kobayashi et al. does not teach a system (a) that is capable of having a temperature-maintenance operation controller configured to execute, if said detected fuel cell temperature equals or is less than a first reference temperature while the start switch is in an off position and said fuel cell system is operating only to supply power to auxiliary equipment of the fuel cell system, wherein the heat generated by the fuel cell is a result of operating at a reduced output and such operation is used to maintain the fuel cell temperature above the fist reference temperature or (b) that has an abnormality determination unit configured to determine whether a detection abnormality regarding

fuel cell temperature has occurred in said temperature detector, including determining that a detection abnormality has occurred when the temperature detector is operating abnormally but not outputting an abnormal temperature reading.

With respect to (a), Bruck et al. teach a fuel cell system that with a temperature sensor that operates in such a manner that during a long rest period (off position) when ambient temperature (as detected by a temperature sensor in an integrated thermal sensor in the electrolyte) is low (first reference temperature), the fuel cell operates minimum/partial load manner, such that external power is applied to a heating element within the electrolyte is sent external power (via the fuel cell in one embodiment or via a secondary battery that is charged via the fuel cell in a second embodiment) (para 0005, para 0008; para 0012-0015; para 0027; para 0045). (It is noted that the operation of a fuel cell, as in either embodiments above would inherently result in heat produced through the reaction, which would also inherently help heat the cell, as would necessarily be part of fuel cell operation.) The motivation for providing such a structure for the above defined operational steps is in order to prevent the electrolyte from freezing when it is note used for a lengthy period , which in turn reduces the membrane resistance which results because of such freezing (para 0004; para 0007). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to provide Kobayashi et al.'s system with the structure of Bruck et al., such that it allows for a temperature-maintenance operation controller to execute when the fuel cell is switched off and the temperature detected within the fuel cell is less than a first reference point, such that the fuel cell is operating at a minimum/partial load

in order to prevent freezing of the electrolyte, which in turn prevents rising resistance of the electrolyte.

Further with respect to (a), it is noted that although Bruck et al. do not teach that the secondary battery that can be charged via the fuel cell is applied to supply power to operate reactant feed (auxiliary equipment) (so that the obviated fuel cell system is capable of operating only to supply power to auxiliary equipment of the fuel cell system). However, at this point, Saitou et al. is relied upon to teach the inclusion of a secondary battery, which can be charged from the fuel cell (para 0171-0172). Saitou et al. specifically teaches that a secondary battery could be used to operate the reactant feed to the fuel cell (para 0171). Accordingly, Saitou et al. also broadly teaches or at least suggests hooking up electrical items to a battery in order to operate them, as applied to the controller). The motivation for including a secondary battery is to help operate the system in such a manner that proper electricity is provided to the necessary parts of the fuel cell system. Therefore one of ordinary skill in the art at the time the invention was made would have found it obvious to include the secondary battery hooked up to a fuel cell for charging in order to properly provide the power needed to run such a fuel cell system.

With respect to (b), Mitsutani et al. is relied upon. (It is first noted that Kobayashi et al. has been used to obviate a warning issuance with respect to a malfunctioning temperature sensor, wherein the sensor reports a temperature abnormality with respect to an abnormal temperature reading). Mitsutani et al. teach of abnormality detection for temperature sensors (thermostats) in general (although applied to the cooling apparatus

of a system) (title; col. 2, lines 45-51). In addition to having a abnormality detection with respect to a preset temperature (as obviated by Kobayashi et al.) (see col. 2, lines 52-67), they also teach of other types of indications of thermostat abnormality. A second aspect of Mitsutani et al.'s invention takes into the consideration of an expected *difference* of a temperature via expected heat added, wherein if the thermostat does not detect an expected change with respect to the expected heat accumulation, an abnormality is detected (col. 3, lines 37-50). Accordingly, such an abnormality detection would show an abnormality of a failed temperature sensor, when the temperature sensor emits a steady reading (that is not necessarily an indication of an abnormal temperature). Furthermore, it is noted that notice of abnormality in Mitsutani et al. is issued in a way similar to Kobayashi et al. – an alarm with respect to a malfunction indicator light (col. 8, lines 39-41). Accordingly, in such a manner both Kobayashi et al. and Mitsutani et al. deal with temperature sensors and possible failures with respect to such temperature sensors. One of ordinary skill in the art would have found it obvious to combine the teaching of Mitsutani et al. (applying an expected heat/temperature change with respect to detecting an abnormality in a temperature sensor) in order to provide the predictable result of having a system with an enhanced system of detecting temperature sensor failures. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to use the teaching of temperature sensor abnormality detection of Mitsutani et al. (which teaches of abnormality indication with respect to both a preset value as well as an expected

change in temperature), which would result in the predictable result of enhancement with respect to abnormality detection within a temperature sensor.

Note: The combination of Kobayashi et al., Bruck et al., Saitou et al., and Mitsutani et al. teach the temperatures sensors, controller, fuel cell exhaust gas, and secondary battery connected in the same way as the claimed apparatus, and thus would be capable of operating in the same manner (namely a defined "maintenance control operation" wherein the temperature is being read, the fuel cell is producing energy, the controller is controlling the operation, wherein a secondary battery is being charged).

Therefore, at the very least, the apparatus of Kobayashi et al. in view of Bruck et al., Saitou et al., and Mitsutani et al. has all of the structural limitations within the claims: (a) ignition (with on/off switching), (b) temperature detector (sensors), (c) temperature-maintenance operation controller (controller), (d) abnormality determination unit (via controller), (e) warning issuance unit (alarm lamp), and (f) battery, as set forth above. Therefore it is structurally the same as that of the claimed application and thus is capable of performing (and thus configured to perform) the claimed actions.

It has been held that the recitation of an element is "capable" of performing a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson,* 69 USPQ 138.

While intended use recitations and other types of functional language cannot be entirely disregarded. However, in <u>apparatus</u>, article, and composition claims, <u>intended use must result in a structural difference between the claimed invention and the prior art</u>

in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. In re Casey, 370 F.2d 576, 152 USPQ 235 (CCPA 1967); In re Otto, 312 F.2d 937, 938, 136 USPQ 458, 459 (CCPA 1963).

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). See also MPEP § 2114.

The manner of operating the device does not differentiate an apparatus claim from the prior art. A claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. Ex parte Masham, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987).

Office personnel are to give claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Also, limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Zletz*, 893F.2d 319, 321-22,13 USPQ2d, 1320, 1322 (Fed. Cir. 1989). (Regarding the broad "configured to" language.)

As to claims 2 and 5, Kobayashi et al.'s system, since it has temperature sensors, a controller, which also detects abnormality, as well as a warning issuance unit (as exemplified by the warning lamp function), would be capable of being programmed

in such a manner that the temperature maintenance operation is stopped via controller [4] when the fuel cell temperature detected by temperature detector (T2 and T3 represent internal fuel cell temperature to some degree) exceeds or is equal to a second reference temperature which is higher than the first reference temperature. (See rejection of claims 1 and 4 for the Office's position on "capable" of for an apparatus claim.) It is also noted that Bruck et al. is relied upon to obviate the specified temperature-maintenance operation, wherein Bruck et al. teaches of such an operation switching on at the freeing point of the electrolyte (first reference temperature) and turns off again at a predetermined temperature, such as the optimum fuel cell operating temperature (second reference temperature) (this temperature is higher than the first reference temperature, as the first reference temperature is defined as a minimum temperature, thus teaching that the second temperature would be higher than that of the minimum).

As to claim 3, Kobayashi et al. has a plurality of temperature detectors, as previously mentioned T1, T2, and T3 (fig. 1). Both T2 and T3 report the internal fuel cell temperature to some extent, as they are placed in the fuel cell exhaust line. Although the abnormality is tested in the T2 and not T3 line, apparatus taught would be capable of applying the abnormality test to both internal temperature indicators. (See rejection of claims 1 and 4 for the Office's position on "capable" of for an apparatus claim.)

As to claims 6-10, Kobayashi et al.'s warning would signal with an abnormality of the temperature detector, where a problem in the temperature detector would inherently be indicated. However, a disconnection or short circuit is not exemplified. However,

Kobayashi et al.'s system, which contains all of the components as that of the claimed invention, would be capable of having the temperature detector send a signal indicating disconnection or short-circuit to controller [4]. (See rejection of claims 1, 4, 13, and 14 for the Office's position on "capable" of for an apparatus claim.)

As to claims 13 and 14, Kobayashi et al. combined with Bruck et al. and Saitou et al., as set forth above, obviates such a feature (having a secondary battery wherein the electronic power generated during the temperature-maintenance operation is charged to the secondary battery). The teachings are reiterated herein for clarity's sake. Bruck et al.'s system has fuel cell operating at minimum/partial load manner, such that external power is applied to a heating element within the electrolyte is sent external power (via the fuel cell in one embodiment or via a secondary battery that is charged via the fuel cell in a second embodiment) (para 0005; para 0015; para 0027; para 0045). Saitou et al. teaches the inclusion of a secondary battery, which can be charged from the fuel cell (para 0171-0172). Saitou et al. specifically teaches that a secondary battery could be used to operate the reactant feed to the fuel cell (para 0171). Accordingly, Saitou et al. also broadly teaches or at least suggests hooking up electrical items to a battery in order to operate them, as applied to the controller).

As to claim 16, Kobayashi et al.'s fuel cell system, since it is structurally the same as that of the claimed invention, is capable of being programmed in such a manner that the second reference temperature is less than a normal operating temperature of the fuel cell. (See rejection of claims 1, 4, 13, and 14 for the Office's position on "capable" of for an apparatus claim.)

As to claim 17, Kobayashi et al.'s fuel system, since it is structurally the same as that of the claimed invention, is capable of being programmed such that the temperature-maintenance operation prevents the fuel cell from freezing but does not warm the fuel cell up to a normal operating temperature. (See rejection of claims 1, 4, 13, and 14 for the Office's position on "capable" of for an apparatus claim.)

4. Claims 11, 12, 18, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of US 2002/0068202 (Gebhardt et al.), US 2003/0029179 (Vander Woude et al.), and Mitsutani et al.

As to claim 11, Kobayashi et al. teach a fuel cell system. Kobayashi et al. teach a fuel cell system. Kobayashi's fuel cell system has an ignition that can be switched on to start the fuel cell (wherein it is interpreted such a switch is a start switch, as the ignition is a switch that start the fuel cell when on) (para 0079). (Note: Since there is a switching to an on position, there must inherently be an off position, since it must be switched to on from off). In fig. 1, temperature sensors are placed to determine the temperature of the fuel cell – T3, which measures cathode exhaust prior being introduced to a compressor, and T2, which measures cathode exhaust after being introduced to a compressor, and T1, which measures the cathode inlet. (Both T2 and T3 report the internal fuel cell temperature to some extent, as they are placed in the fuel cell exhaust line.) Fig. 4 teaches a start up warming-up method for the fuel cell (para 0081, lines 1-3). The controller judges whether the exhaust Ae at the outlet of the fuel cell of the cathode is *lower* than 20ºC, if not warm-up is finished, but if so warm-up is continued (para 0083; para 0084, lines 1-3). It is noted that exhaust fro the fuel cell is

recycled to the reactant during warm-up (para 0009-0010). (The exhaust of a fuel cell system holds heat generated from the electrochemical reaction.) This sort of test is performed for the air exhaust discharge from the compressor, the limit being 130ºC, then warm up continues as well (para 0084, lines 10-15). Furthermore, by measuring temperatures (namely the one discharge side of the compressor), the system (via controller [4]) recognizes an abnormality and turns on an alarm lamp to inform the driver (para 0085). The abnormality discovered is based off of the internal temperature of the fuel cell and would pertain to something within the fuel cell (be it the stack or the temperature sensor).

Kobayashi et al. does not teach of (a) detecting a fuel cell temperature when the start switch is on the off position and executing a temperature-maintenance operation of the fuel cell using heat generated through electrochemical reaction by controlling the fuel cell to operate at reduced output if the detected fuel cell temperature equals or falls below a first reference temperature while the start switch is in the off position or (b) determining whether an abnormality has occurred in a temperature detector that detects said fuel cell temperature when said fuel cell is detected, (c) including determining that a detection abnormality has occurred when the temperature detector is operating abnormally but is not outputting an abnormal temperature reading.

With respect to (a), However, Gebhardt et al. teach of operating a fuel cell battery (referred to in the art as a battery, however, the taught system is a fuel cell system), wherein the operation of the fuel cell is restarted even when not being used (during an off period) so that the temperature does not drop below the freezing point

(thus using heat generated by operation) (para 0004-0005). The motivation for wanting to provide temperature-maintenance in such a manner as describe by Gebhardt et al. is in order to keep water from freezing in the fuel cell, since freezing water increases the resistance of a fuel cell (para 0004). Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to execute a temperature-maintenance operation by restarting the fuel cell, when that fuel cell temperature equals or falls below a first reference temperature (freezing point) in order to prevent freezing of the water in the fuel cell and thus prevent the resistance that results from freezing.

With respect to (b), Vander Woude et al. teach a cryogenic temperature control apparatus and method. The system provides a plurality of temperature values to a controller (abs). Furthermore, controller [34] is programmed to accommodate failure of the sensors (para 044, lines 1-2). Vander Woude et al.'s method determines if sensors are damaged or defective – checking if the temperature sensors [45, 46] fall outside a certain range (para 0044, lines 2-7). If the sensor fails, the control apparatus [12] activates an alarm (para 0044, lines 8-10). The motivation for combining the Vander Woude et al. teaching with the Kobayashi et al. teaching is that they address the same problem, an abnormality with a system that is dependent on temperature values. Furthermore, it would further be a motivation to provide a fuel cell system (as taught by Kobayashi et al.) that can determine whether the fuel cell stack has the problem or the temperature sensor has the problem, so that it can be fixed more easily. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed

invention was made to combine the defective temperature sensor method or Vander Woude et al. with the fuel cell system of Kobayashi et al. in order to more effectively inform the user of the specific placement of a defect in the fuel cell system (specifically the temperature sensor).

With respect to (c), Mitsutani et al. is relied upon. (It is first noted that Kobayashi et al. in view of Vande Woude et al. has been used to obviate a warning issuance with respect to a malfunctioning temperature sensor, wherein the sensor reports a temperature abnormality with respect to an abnormal temperature reading, as set forth above). Mitsutani et al. teach of abnormality detection for temperature sensors (thermostats) in general (although applied to the cooling apparatus of a system) (title; col. 2, lines 45-51). In addition to having a abnormality detection with respect to a preset temperature (as obviated by Kobayashi et al.) (see col. 2, lines 52-67), they also teach of other types of indications of thermostat abnormality. A second aspect of Mitsutani et al.'s invention takes into the consideration of an expected *difference* of a temperature via expected heat added, wherein if the thermostat does not detect an expected change with respect to the expected heat accumulation, an abnormality is detected (col. 3, lines 37-50). Accordingly, such an abnormality detection would show an abnormality of a failed temperature sensor, when the temperature sensor emits a steady reading (that is not necessarily an indication of an abnormal temperature). Furthermore, it is noted that notice of abnormality in Mitsutani et al. is issued in a way similar to Kobayashi et al. – an alarm with respect to a malfunction indicator light (col. 8, lines 39-41). Accordingly, in such a manner both Kobayashi et al. and Mitsutani et al.

deal with temperature sensors and possible failures with respect to such temperature sensors. One of ordinary skill in the art would have found it obvious to combine the teaching of Mitsutani et al. (applying an expected heat/temperature change with respect to detecting an abnormality in a temperature sensor) in order to provide the predictable result of having a system with an enhanced system of detecting temperature sensor failures. Therefore it would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to use the teaching of temperature sensor abnormality detection of Mitsutani et al. (which teaches of abnormality indication with respect to both a preset value as well as an expected change in temperature), which would result in the predictable result of enhancement with respect to abnormality detection within a temperature sensor.

As to claim 12, Vander Woude et al. teach a system where defrosting is initiated when the evaporator coil outlet temperature (ECOT) is equal to or less than -40ºF (para 0053, lines 1-3). Once the defrost mode is initiated, the defrosting continues until the ECOT reaches 59ºF (para 0054, lines 1-5). (Again, the art of Kobayashi et al. and Vander Woude et al. can be combined, because they are used to solve the same problem– detecting abnormality (as discussed with the claim 11 rejection). Furthermore, this mode of operation of Vander Woude et al. pertains to warming-up of a system, as is taught by Kobayashi et al.)

As to claims 18 and 19, the combination of Kobayashi et al., Vander Woude et al., and Gebhardt et al. would inherently result in the fact that the second reference temperature is less than the normal operating temperature of the fuel cell (as required

by claim 18), wherein the operation prevents the fuel cell from freezing but does not warm the fuel cell up to the normal operating temperature (as required by claim 19).

The basis of inherency lies in the fact that (a) Vander Woude et al.'s sensor does have a stopping point on temperature maintenance and (b) that Gebhardt et al. teach of running the fuel cell at a minimal load to just prevent freezing (as set forth in the rejection of claims 11 and 12). More specifically, the process of Gebhardt et al. is the same as that of the instant application, wherein the instant application also runs the fuel cell stack at a lower power than normal operation (p 9, lines 8-10). Therefore, since the process operation is the same for the set goal, the combination of the teachings would yield such a characteristic of running.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al. in view of Vander Woude et al., Gebhardt et al., and Mitsutani et al., as applied to claim 11, in view of Saitou et al.

The combination of Kobayashi et al., Vander Woude et al., Gebhardt et al., and Mitsutani et al. does not provide a secondary battery wherein the electronic power generated during the temperature-maintenance operation is charged to it.

Saitou et al. teaches the inclusion of a secondary battery, which can be charged from the fuel cell upon generation of electricity (para 0171-0172). The motivation for including a secondary battery would be to operate the reactant feed to the fuel cell (para 0171). Therefore one of ordinary skill in the art at the time the invention was made would have found it obvious to include the secondary battery hooked up to a fuel cell for charging in order to properly provide the power needed to supply the reactants to the

fuel cell. (It is noted that since Saitou et al. teaches that the fuel cell power is used to charge the battery, the inclusion of Saitou et al.'s battery would obviate the step of using provided electricity to charge the battery. For clarity's sake, it is set forth that the motivation for using the electricity generated by the fuel cell during temperature maintenance to charge a fuel cell would be in order not to waste the power provided and to more efficiently use the system. Therefore one of ordinary skill in the art at the time the invention was made would have found it obvious to charge the battery with electricity generated by the fuel cell in order to provide an efficient system wherein power is not wasted.)

Response to Arguments

6. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

It is noted that the previous 112 (first and second paragraph) rejections have been withdrawn in light of the amendment clarifying the indefinite issues and deleting the new matter issues. However, a new rejection, similar to the non-final office action dated March 3, 2008 is applied, wherein it is submitted that the new references (Bruck et al., Mitsutani et al., and Gebhardt et al.) teach the amended claimed subject matter.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to EUGENIA WANG whose telephone number is (571)272-4942. The examiner can normally be reached on 7 - 4:30 Mon. - Thurs., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/E. W./
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795